

ADDENDUM TO THE FEDERAL BIOLOGICAL EVALUATION

for

PRESCRIBED BURNING OF CAVE HILL, DENNISON HOLLOW, AND STONEFACE RESEARCH NATURAL AREAS AND SIMPSON TOWNSHIP BARRENS ECOLOGICAL AREA, AND ADJACENT FOREST COMMUNITIES

Background

In 2010, an environmental effects analysis was completed, resulting in the issuance of a Decision Memo (DM) for the proposed “*Prescribed Burning of Cave Hill, Dennison Hollow, and Stoneface Natural Area, and Simpson Township Barrens Ecological Area, and Adjacent Forest Communities Project*”, located in Saline and Johnson Counties in Illinois. As part of this environmental analysis, a Biological (BE) was completed to document the likelihood of occurrence of, and potential effects/impacts to federally threatened-endangered-proposed-candidate (TEPC) terrestrial and aquatic organisms from the implementation of the above listed project.

New Occurrence Information for Federally-Listed Species

At the time that the original BE was completed for terrestrial animal species, the Indiana bat (*Myotis sodalis*) was not known to utilize any caves or mines within the project activity area, which was stated in the wildlife working paper and BE. Several male Indiana bats had previously been captured by Forest Service wildlife biologists while conducting fall swarming surveys at the entrance to Equality Cave (aka Cave Hill Cave). However, in January 2011, Forest Service wildlife biologists and researchers from Ball State University (BSU), while conducting a hibernacula survey, found two Indiana bats; one adult male and one adult female, roosting in Equality Cave. Up until this time, no Indiana bats had ever been documented using Equality Cave as a winter roost site.

The Shawnee National Forest contacted Joyce Collins, Assistant Field Supervisor for the Marion, Illinois Sub- Field Office of the US Fish and Wildlife Service-Ecological Services, within 24 hours to report the finding of the two Indiana bats in Equality Cave. At this time, Ms. Collins indicated that it would be best to wait and see if Indiana bats were again found using Equality Cave in 2012 before making a determination if Equality Cave warrants being considered an Indiana bat hibernacula. On February 15, 2012, Forest Wildlife Biologist Rod McClanahan, with the assistance of Joe Kath, Endangered Species Program Coordinator for the Illinois Department of Natural Resources-Division of Natural Heritage, conducted a bat survey of Equality Cave, as well as conducted White-Nosed Syndrome (WNS) monitoring. No Indiana bats were found using Equality Cave, so it is likely that Equality Cave is not consistently serving as a winter hibernacula for Indiana bats.

The documenting of Indiana bats winter roosting in Equality Cave in January 2011 constitutes new information, and thus necessitates the development of an addendum to the BE so as to consider any potential effects to Indiana bats that may not have been addressed in the original BE. This new information also will necessitate additional informal consultation with the Marion Sub-Field Office, US Fish and Wildlife Service.

The objective of this Addendum to the Federal Biological Evaluation is as follows:

- a) Since the Indiana bat was not known to be present within Equality Cave at the time that the original BE was prepared, it is the intention of this addendum to the BE to also discuss and display any potential effects that may occur to winter roosting Indiana bats in Equality Cave from the implementation of the *“Prescribed Burning of Cave Hill, Dennison Hollow, Stoneface Research Natural Areas and Simpson Township Barrens Ecological Area, and Adjacent Forest Communities Project”*.

Species Reviewed

With the exception of the Indiana bat, no new occurrence information regarding the presence of any other terrestrial or aquatic federal TEPC species has come to light for this project since the original BE was prepared. Consequently, this addendum will only evaluate potential effects to the Indiana bat.

Indiana bat (*Myotis sodalis*)

The use of prescribed fire can have both direct and indirect effects on Indiana bats. Many of the potential direct and indirect effects that may take place to Indiana bats from the proposed project have been previously thoroughly discussed in the original wildlife working paper and BE. However, the original effects analysis prepared for this project did not address the potential direct effects of dormant season prescribed burning to winter roosting Indiana bats inside Equality Cave, since the species was not known to use Equality Cave as a winter roost site.

The primary concern with winter burning (October 1-April 30) near Indiana bat hibernacula is smoke intrusion into hibernacula because of the potential for causing premature arousal in hibernating bats. The scientific literature is replete with well-documented examples of disturbances resulting in declines in populations of hibernating bats. Disturbance that takes place during winter hibernation can cause bats that are in winter torpor to become aroused and in doing so prematurely use-up fat reserves essential for successful hibernation. Disturbance of winter hibernating Indiana bats seldom results in immediate mortality of bats within the hibernacula. Impacts may not be obvious, but there is general consensus that disturbance of winter hibernating bats affects survival, which may be expressed as decreased survival or lower rates of reproduction after the bats emerge from hibernation in the spring. Not only is it difficult to evaluate the degree to which disturbance causes mortality, but it can be difficult to detect the arousal response to disturbance. Bats may not show any immediate response to disturbance, but a response may occur later and therefore go undetected by the individual(s) that

caused the disturbance. Impacts may not only be delayed but they can also be prolonged (i.e. arousal may last far longer than the disturbance) (USFWS 2007).

The original wildlife working paper and Federal BE that were prepared for this project required mitigation measures built into the decision (Design Criteria) so as to minimize, to the extent practicable, the likelihood of particulate, gaseous materials and smoke emissions produced from prescribed burning from entering into Equality Cave, and thus reducing the risks of having direct impacts on winter roosting southeastern myotis (*Myotis austroriparius*), which are known to use Equality Cave as a winter roosting site. These same required mitigation measures should prove equally applicable and effective in reducing, to the extent practicable, the likelihood of particulate and gaseous emissions resulting from prescribe burning having any direct adverse effects to any winter roosting Indiana bats in Equality Cave.

The “2005 USFWS Programmatic Biological Opinion (BO) for the Proposed 2006 Forest Plan for the Shawnee National Forest-Appendix A”, provides specific protective measures designed to reduce the likelihood of dormant-season prescribed burning activities conducted during the winter hibernation period resulting in adverse direct effects occurring to roosting Indiana bats. These are listed as follows:

Fire Management

-FW51.2.1.1 (S) Smoke-management planning is used to control the effects of smoke emissions and meet air-quality standards. During prescribed fires, consideration shall be given to smoke-sensitive areas including Indiana or gray bat hibernacula that may lie downwind of the burn.

-FW51.2.1.2 (S) Burns within 0.25 miles of any Indiana or gray bat hibernacula shall be conducted under conditions that will reduce or eliminate smoke dispersing into the hibernacula.

The original wildlife working paper and Federal BE stated that “these same mitigation measures will apply equally to winter roosting Indiana bats, should they ever be found at a future point in time using Equality Cave”.

Additionally, implementation of USFWS BO “terms and conditions”, as previously listed in this document (*FW51.2.1.1 (S) and FW51.2.1.2 (S)*), provide an additional degree of protection to ensure that smoke levels from burning do not enter into Equality Cave so as to cause an adverse disturbance to winter Indiana bats.

The original Federal BE required that smoke emissions be monitored at the entrance to, and inside Equality Cave during firing operations. In the event that smoke was recorded entering Equality Cave to the point that an arousal response was observed, then ignition operations would be suspended, and a new firing strategy developed so as to reduce smoke emissions entering Equality Cave. Firing would take place a suitable distance from the opening of Equality Cave, and firing operations would be suspended earlier in the day so as to reduce the likelihood of smoke settling into the cave entrance resulting from temperature/humidity inversion surrounding the cave after sunset.

While it is tempting to assign some arbitrary minimum linear distance from the entrance to Equality Cave that firing operations could take place, the actual distance must be dictated by the actual

physiographic conditions existing on the landscape surrounding the cave entrance. Jon Teutrine, District Fire Management Officer for the Hidden Springs Ranger District, will establish a fire exclusion area around the entrance to Equality Cave to commensurate with whatever distance is deemed biologically appropriate. This distance will be determined by the local landscape conditions in order to minimize the likelihood of smoke entering Equality Cave. Mr. Teutrine has also agreed to place smoke/fire emission monitors inside Equality Cave so as to monitor any smoke emissions entering Equality Cave, to maintain communications between the Firing Boss and personnel monitoring smoke inside Equality Cave so that fire ignition can either be suspended and/or modified to minimize smoke levels entering Equality Cave, and to terminate ignition operations in the afternoon/evening early enough so as to minimize the potential for smoke inversion taking place. An Anabat detector will also be set up inside Equality Cave so as to monitor any change in bat activity levels.

White-nosed Syndrome

While it is recognized that the westward spread of WNS will occur at least at the current rate of spread, it is likely that WNS will make its initial appearance in caves and mines in southern Illinois within the next one to three years. However, the Shawnee National Forest is doing everything feasible to reduce the likelihood of WNS entering caves and mines on the Forest and to slow the spread of WNS.

Additionally, Forest Service wildlife biologists are working cooperatively with the Illinois Department of Natural Resources, the US Fish and Wildlife Service, as well as several universities, to monitor for the presence of WNS in southern Illinois. Researchers from Western Illinois University have been monitoring many of the larger Indiana bat hibernacula on the Forest for the past several winters for the possible presence of WNS. To date, WNS has not been suspected or confirmed in southern Illinois. During February of 2012, researchers from the University of Illinois-Illinois Natural History Survey initiated an additional WNS monitoring project, sampling bats from several Indiana bat hibernacula on, and near, the Forest. Results from this sampling effort are not available at this time pending the completion of necessary laboratory analyses.

Additionally, all of the caves and mines known to be used by winter roosting bats are administratively closed to unauthorized public entry, and most are physically closed using cave gates or other closure structures (i.e. fencing). Forest Service personnel and researchers must fully comply with the most current USFWS decontamination protocol when entering and exiting from caves and mines on the Forest.

It is expected that once WNS is documented in hibernacula on the Forest, there may be an increase in winter mortality and reduced winter population numbers of winter roosting Indiana bats using the Forest. However, the degree to which bat populations decrease is hard to predict. Reduced population numbers may be both in the summer as well as during the winter hibernation period. Researchers monitoring winter bat populations in many northeastern states have recorded as high as 96 percent population reductions in historical hibernacula. Based upon comments made from recognized bat researchers, it is feasible that overall winter mortality levels occurring in the more southerly Midwestern states may be significantly lower than levels reported thus far for states in the Northeast due to milder

winter temperatures and conditions. Milder winter weather conditions may allow WNS-affected winter roosting bats to exit from hibernacula to forage and to drink on warm nights. It is common for daytime winter temperatures to periodically reach from the mid-50 to mid-60 degree F range. This ability may be a critical factor that permits bats exposed to WNS to effectively weather the initial infection and have a higher overall winter survival rate.

An updated WNS Record of New Information (WNSRONI) was prepared in early February 2012, and is currently being evaluated by the Marion Sub-Field Office of the USFWS for concurrence. This updated WNSRONI includes all of the most current information on WNS, as well as any new occurrence information for Indiana bat, as well as for the gray bat.

The mitigation measures that have been designed and built into the Decision Memo (Prescribed Burn Project), Shawnee National Forest Plan standards and guidelines, as well as full implementation of the USFWS BO “terms and conditions,” should prove effective in reducing the likelihood of smoke emissions (solid or gaseous materials) produced during dormant-season prescribed burning causing a premature arousal of winter roosting bats in Equality Cave. These mitigation measures were designed to protect the population of southeastern myotis using Equality Cave, since Equality Cave has not officially been recognized by the USFWS as an Indiana bat hibernacula.

It is also likely that Indiana bats may never again be observed using Equality Cave as a winter site, but for this analysis process, it will be assumed that Indiana bats could continue to utilize Equality Cave as a winter roost site, even if it is in a sporadic use pattern. This is likely given that surveys conducted on February 15, 2012 failed to find any Indiana bat present in Equality Cave.

Given the degree of protection measures, which have been built into the environmental analysis for this project, and based on the “best available science” it is felt that no additional adverse effects to Indiana bat populations, not previously addressed in the previous BE, will take place from the implementation of prescribe burning activities. Consequently, the determination of effects to Indiana bats remains as “*May affect-not adversely affect.*” Implementation of the “*Prescribed Burning of Cave Hill, Dennison Hollow, and Stoneface Research Natural Area, and Simpson Township Barrens Ecological Area, and Adjacent Forest Communities Project*” should not result in any additional cumulative adverse effects to populations of Indiana bat on the Shawnee National Forest, in Illinois, or throughout the species’ current range in North America.

Informal consultation with the Marion Illinois Sub-Field Office of the USFWS conducted via the original BE resulted in concurrence from that office that the “terms and conditions” provided by the USFWS in their 2005 BO remain valid and effective in reducing the likelihood of the implementation of management activities having adverse effects to Indiana bat populations on the SNF; and, the effects resulting to Indiana bat populations from the implementation of management activities do not constitute an adverse cumulative effect with documented effects from WNS .

It is the conclusion of this addendum to the BE that while the finding of the two Indiana bats using Equality Cave in January 2011 does constitute “new information,” the Design Criteria, development and compliance with monitoring plans, and full compliance with the USFWS BO “terms and conditions”

remain effective in reducing, to the degree practicable, the likelihood of the implementation of this project adversely affecting the Indiana bat, and the affects determination for Indiana bat remains “*may affect-not adversely affect*” populations or habitat of the Indiana bat.

Literature Cited and Referenced

USDI. 2012. White-nose syndrome update for agency field biologists and agency land managers Webinar Series. US Fish and Wildlife Service.

USDA-Forest Service Manual. FSM 2600 - Wildlife, Fish, and Sensitive Plan Habitat Management, R9 Supplement No. 2600-2000-1, Effective January 28, 2000, Page 3.

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February 24, 2012

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DATE

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US Fish and Wildlife Service Comments/Concurrence:

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March 12, 2012

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DATE